

EXHIBIT 15



Report on Wastewater Rates



**for the
Metropolitan Sewer
District of Hamilton County
Managed by the
City of Cincinnati, Ohio**

April 2003





BLACK & VEATCH

11401 Lamar Avenue
Overland Park, Kansas 66211 USA

Black & Veatch Corporation

Tel: (913) 458-2000

April 11, 2003

Mr. Patrick T. Karney, P. E.
Director, Metropolitan Sewer District
of Greater Cincinnati
1600 Gest Street
Cincinnati, OH 45204

Dear Mr. Karney:

Presented herein is Black & Veatch's Report on *Wastewater Rates for the Metropolitan Sewer District of Hamilton County managed by the City of Cincinnati, Ohio*. A summary of the reports principal findings begins on page 3 and includes the rates adopted by the Hamilton County Board of Commissioners and implemented January 9, 2003.

I would like to take this opportunity to thank MSD staff for their assistance in providing input and review throughout the study. It has been a pleasure serving the District on this assignment and we look forward to working with you on future endeavors.

Very truly yours,

BLACK & VEATCH

Peggy L. Howe
Principal Consultant

PLH:mdp

Enclosure



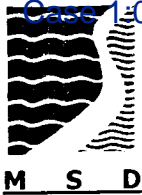
Contents

INTRODUCTION	1
GENERAL BACKGROUND.....	1
PURPOSE	2
SCOPE	2
SUMMARY OF FINDINGS	3
REVENUE.....	9
CUSTOMER GROWTH.....	9
WASTEWATER REVENUE UNDER EXISTING RATES.....	11
REVENUE REQUIREMENTS	14
OPERATION AND MAINTENANCE EXPENSE.....	14
CAPITAL IMPROVEMENT PROGRAM.....	16
<i>Capital Improvement Program Financing Plan</i>	16
<i>Debt Service Requirements</i>	18
REVENUE REQUIREMENT LEVELS	20
COST OF SERVICE ALLOCATIONS.....	23
COST OF SERVICE TO BE ALLOCATED.....	23
FUNCTIONAL COST COMPONENTS	24
ALLOCATION TO COST COMPONENTS	25
<i>Plant Investment, Replacement, and Capital Costs</i>	26
ALLOCATION OF OPERATION AND MAINTENANCE EXPENSE.....	28
SUMMARY OF ALLOCATION TO FUNCTIONAL COST COMPONENTS	29
DISTRIBUTION OF COSTS TO CUSTOMER CLASSES	30
<i>Customer Classifications</i>	30
<i>Units of Service</i>	30
COST OF SERVICE ALLOCATIONS	33
ADEQUACY OF EXISTING RATES TO MEET COST OF SERVICE	34
PROPOSED WASTEWATER RATE ADJUSTMENTS.....	35
EXISTING RATES	35
PROPOSED WASTEWATER RATE ADJUSTMENTS.....	36
<i>Proposed Sewerage Service Charges</i>	36
<i>Proposed Sewerage Surcharges</i>	38
<i>Proposed Industrial Pretreatment Charges</i>	38



M S D

ADEQUACY OF PROPOSED WASTEWATER CHARGES	39
TYPICAL BILLS.....	40



List of Tables

TABLE A PROPOSED SEWERAGE SERVICE CHARGES - TEST YEAR 2003.....	6
TABLE B PROPOSED SEWERAGE SURCHARGES - TEST YEAR 2003	7
TABLE C PROPOSED INDUSTRIAL PRETREATMENT CHARGES - TEST YEAR 2003.....	8
TABLE 1 HISTORICAL AND PROJECTED ACCOUNTS.....	9
TABLE 2 HISTORICAL AND PROJECTED BILLED VOLUMES	10
TABLE 3 EXISTING RATES.....	11
TABLE 4 HISTORICAL AND PROJECTED REVENUES	12
TABLE 5 OPERATING AND NON-OPERATING REVENUE.....	13
TABLE 6 HISTORICAL AND PROJECTED OPERATION AND MAINTENANCE EXPENSE	15
TABLE 7 CAPITAL IMPROVEMENT PROGRAM	16
TABLE 8 CAPITAL IMPROVEMENT FINANCING PLAN.....	17
TABLE 9 EXISTING AND PROJECTED LONG-TERM DEBT SERVICE.....	19
TABLE 10 ESTIMATED REVENUES AND REVENUE REQUIREMENTS UNDER INCREASED RATES	21
TABLE 11 COST OF SERVICE TO BE RECOVERED FROM RATES - TEST YEAR 2003	23
TABLE 12 ALLOCATION OF PLANT INVESTMENT TO FUNCTIONAL COST COMPONENTS - TEST YEAR 2003..	26
TABLE 13 ALLOCATION OF OPERATION AND MAINTENANCE EXPENSE TO FUNCTIONAL COST COMPONENTS - TEST YEAR 2003.....	28
TABLE 14 SUMMARY OF ALLOCATION TO FUNCTIONAL COST COMPONENTS - TEST YEAR 2003	29
TABLE 15 ESTIMATED UNITS OF SERVICE - TEST YEAR 2003	31
TABLE 16 UNIT COSTS OF SERVICE AND CUSTOMER CLASS ALLOCATION - TEST YEAR 2003	33
TABLE 17 COMPARISON OF ALLOCATED COST OF SERVICE WITH REVENUES UNDER EXISTING RATES - TEST YEAR 2003.....	34
TABLE 18 PROPOSED SEWERAGE SERVICE CHARGES - TEST YEAR 2003.....	37
TABLE 19 PROPOSED SEWERAGE SURCHARGES - TEST YEAR 2003	38
TABLE 20 PROPOSED INDUSTRIAL PRETREATMENT CHARGES - TEST YEAR 2003	39
TABLE 21 COMPARISON OF REVENUE UNDER PROPOSED CHARGES WITH TOTAL COST OF SERVICE - TEST YEAR 2003.....	40
TABLE 22 TYPICAL CUSTOMER SEWER BILLS UNDER EXISTING AND PROPOSED RATES	41



Introduction

The Metropolitan Sewer District of Greater Cincinnati and the Department of Sewers, City of Cincinnati was created through legislation, enacted April 10, 1968, by the Board of Hamilton County Commissioners and the City Council of Cincinnati. The legislation provided for consolidation of sanitary wastewater service embracing most of the political subdivisions of Hamilton County including the City of Cincinnati, and all unincorporated areas in the County. Warren County is a participant in the District on the basis of an agreement signed in 1970. The City of Cincinnati, through the Department of Sewers, accepted the responsibility for managing and operating the Metropolitan Sewer District, hereinafter referred to as the District, for the Hamilton County Commissioners.

General Background

The present wastewater system has been developed and constructed over the years in a continuing effort to improve water quality in area streams and provide better service to the metropolitan community. In order to comply with increasingly stringent state and federal environmental regulations, to provide for renewal and replacements, and to accommodate growth, the District has been required to construct major improvements to existing facilities which will enable the District to meet these requirements. A significant portion of the cost of these improvements in the past which were required to meet the requirements of the Federal Clean Water Act were partially financed through the receipt of Federal Environmental Protection Agency (EPA) grants. Inasmuch as the federal grants program has been phased out, the local share of the District's major capital improvement costs, especially those to correct future known capacity problems and to address special compliance project needs, are to be financed primarily through the issuance of municipal bonds.

Costs of operating, maintaining, and financing system improvements are met primarily from revenue derived from charges to users. Increased requirements due to new programs associated with the compliance of the consent decree, financing costs of major new facilities and recognition of inflationary costs associated with day to day operation require more revenue than can be recovered under the schedule of rates implemented January 9, 2002.

Additional requirements of the EPA, related to federal grant funding of construction costs, require that the District comply with specific regulations regarding "user charges." The system of user charges must be in accordance with the Federal Clean



Water Act of 1977 (PL 95-217) as amended, and EPA rules and regulations. In order to comply with these requirements and to assure adequate revenue for system operation, maintenance, replacement (OM&R), and capital requirements, the District authorized this comprehensive study of revenue, revenue requirements, cost of service, and development of charges for wastewater service.

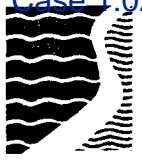
Purpose

This report presents the results of an analysis of costs of providing wastewater service in the District with proposals for rates which will reasonably recover revenue from the various classes of customers commensurate with costs of providing service. Rates are proposed which will provide adequate funds to meet the revenue requirements of the District for the 2003 calendar year period, and which will meet EPA requirements. The need for annual rate adjustments subsequent to the 2003 test year has also been identified.

Scope

Included in the report are the results of comprehensive studies of projected revenue under existing rates, revenue requirements, customer cost of service, and rates for wastewater service.

The comparison of projected revenue requirements with projected revenue under existing rates is indicative of the degree of adequacy of the overall level of those rates to meet projected costs. The costs to be met during an initial period of adequacy are allocated to classes of customers and type of service, and rates adequate to meet those costs are designed. The proposed rates will provide sufficient revenue to meet system needs and provide for charging each class of customer its proportionate share of system costs. Recognition is also given to meeting EPA user charge criteria related to the receipt of grant awards on construction projects.



M S D

Summary of Findings

Summary of Findings

The principal findings of the report and actions taken by the Hamilton County Board of Commissioners to adopt a schedule of wastewater rates following public hearings on proposed wastewater rate adjustments are summarized in this section. During the course of Black & Veatch's study, various assumptions were made regarding the forecast of inflation and bond interest rates affecting the projection of future operation and maintenance expenses and debt service payments on proposed bond sales to finance the District's major capital improvement program. The following summarizes the principal findings from Black & Veatch's studies and the rates adopted by the District and made effective January 9, 2003.

1. The District is estimated to be currently serving approximately 227,000 customer accounts. Due to inconsistencies in billing data and revenues experienced in previous rate studies, for this study, a detailed analysis was performed on raw billing data. The results of the analysis indicated a decrease in total billable accounts between 2000 and 2001. Projections used in this study are based on the 2001 analysis. Review of historical growth patterns in total customer counts and revenues supports the no growth scenario used for this analysis.
2. Revenues of the District required to meet the costs of providing wastewater service to customers is derived principally from sewerage service charges, excess strength surcharges, and industrial pretreatment charges. Other revenue sources include the sale of permits and licenses, plan review and inspection fees, connection charges, interest earned from the investment of available funds and other miscellaneous sources. Future revenue levels are predicated on a no-growth scenario, associated wastewater sales volume, and revenue derived from charges for service which are estimated to increase to \$116,006,000 by 2006 under present rates.
3. The District has developed a proposed five-year capital improvement program totaling \$470,150,000 for the period 2002 to 2006. This total includes \$353,517,000 of approved projects, \$12,896,000 of assessment project initiatives, and \$103,736,000 of potential capital additions. To finance the capital program, several funding sources are planned to be used including funds on hand, the sale of proposed revenue bonds, annual connection fees, net operating revenues, and interest earnings from the construction fund. It is projected that the District will be required to issue \$200,000,000 in proposed revenue bonds over the study period.



Summary of Findings

4. The District's annual revenue requirements which consist of operation and maintenance expenses, debt service payments for existing and proposed bonds, annual equipment purchases, and the necessity to generate sufficient excess net operating revenues to maintain desired debt service coverage levels are projected to increase over the study period. Operating expenses, as forecast, are projected to escalate from \$82,547,000 to \$91,759,000 or at an average annual rate of about 3 percent per year due primarily to general inflationary increases. Debt service payments are projected to increase from \$40,867,000 to \$55,897,000 during the study period due to the issuance of additional long term debt.
5. Projected wastewater revenues under existing rates are indicated to be insufficient to recover the District's future revenue requirements during the proposed study period. A 7.0 percent revenue increase effective January 9, 2003, was approved by the Hamilton County Commissioners. A series of subsequent annual revenue adjustments of 7.0 percent in 2003, 2004, 2005 and 2006 are indicated to also be required.
6. The 7 percent adjustment in the level of wastewater service charge revenues approved by County Commissioners is projected to produce sufficient revenues to meet the District's cash obligations or revenue requirements through the end of calendar year 2003 and provide adequate debt service coverage.
7. The total revenue requirements to be derived from charges for wastewater service are synonymous with, and are the definition of, the total cost of service. The District's estimated annual cost of service to be met from wastewater charges, totaling \$124,126,000 for the 2003 test year, or the period of adequacy for which the rates are to be in effect, consist of the following elements:

Operation and Maintenance Expense	\$79,343,000
User Charge Replacements	5,020,000
Capital Costs	<u>39,763,000</u>
Total Cost of Service to be Met from Rates	\$124,126,000

8. Detailed cost of service studies were made for the 2003 test year to establish costs of providing wastewater service to the individual customer classes served. Such studies involved an analysis of costs by system function including those related to the volume, capacity, and strength of wastewater, and to customer billing and industrial pretreatment program requirements. A summary of the District's allocated cost of service by these functional classifications is as follows:



Summary of Findings

Volume Related Cost	\$14,642,000
Capacity Related Cost	56,127,000
Strength Related Cost	
Suspended Solids	20,251,000
BOD	23,159,000
TKN	2,991,000
Customer Cost	4,621,000
Industrial Monitoring and Surveillance	
Surcharge	686,000
Pretreatment	<u>1,649,000</u>
Total Cost of Service	\$124,126,000

9. A comparison of the resultant total cost of service allocated to each customer class based upon their respective service requirements with revenue under existing rates and the indicated revenue increase required from each class is as follows:

Customer Class	Total Cost of Service	Revenue Under Existing Rates	Indicated Revenue Increase Required
	\$	\$	\$
Residential	60,613,000	57,178,500	3,434,500
Commercial	29,016,000	27,757,700	1,258,300
Industrial	20,781,000	21,051,000	(270,000)
Surcharge	12,519,000	9,035,000	3,484,000
Industrial Pretreatment			
Annual Fee	203,000	203,000	-
Monitoring Charges	<u>994,000</u>	<u>781,000</u>	<u>213,000</u>
Industrial Pretreatment	<u>1,197,000</u>	<u>984,000</u>	<u>213,000</u>
Total	124,126,000	116,006,200	8,119,800

10. Based upon results from the detailed cost of service studies for the 2003 test year, the adopted schedule of sewerage service charges, surcharges, and pretreatment charges shown in Tables A, B, and C were developed to recover the District's cost in an equitable and practical manner from all customers served.



Summary of Findings

Table A
Proposed Sewerage Service Charges - Test Year 2003

Minimum Charge

The minimum charge shall be based on the size of the water meter used to serve the premises, or the size of the premise served, as determined by the number of units therein, whichever results in the larger minimum charge.

The minimum charge shall include the allowance for the first 500 cubic feet of water used in the case of monthly bills; and the first 900 cubic feet of water used, in the case of quarterly bills.

The minimum charge rates shall be as follows:

Meter Size	Number of amily Units	Monthly Bills	Quarterly Bills
Inches		\$	\$
5/8	1	20.66	42.47
3/4	2-3	24.79	54.76
1	4-5	31.90	75.08
1-1/2	6-12	49.18	127.58
2	13-20	67.78	180.72
3	21-50	166.12	463.78
4	51-115	275.09	768.09
6	116-200	538.20	1,517.58
8	Over 250	799.99	2,264.42
10		1,075.07	3,025.87
12		1,251.80	3,493.65

Commodity Charge

The commodity charge shall be based on the quantity of water used on the premises served as same is measured by a water meter or meters therein used, which meters must be acceptable to the Municipality that collects such charge.

The commodity charges for each 100 cubic feet (Ccf) consumed are as follows:

First 500 cubic feet per month: or 900 cubic feet per quarter -	Minimum
Next 4,500 cubic feet per month: or 14,100 cubic feet per quarter -	\$2.127 /Ccf
Over 5,000 cubic feet per month: or 15,000 cubic feet per quarter -	\$1.701 /Ccf

Basis of Charge

For residential water service accounts (one and two family residences) a quarterly minimum and commodity charge shall be based upon water used during a winter quarterly billing period. Said winter period being the quarterly billing period most closely corresponding to usage during the months of October through April. Said charges shall be payable with each bill rendered throughout the year.

All non-residential customers shall be charged based upon the water used during a billing period that is subject to a sewerage charge. The District will consider applications, fully supported, for adjustment due to nonsewered water use. All well water and water reaching the system from other sources will be considered in the basis for charge.



Summary of Findings

Table B

Proposed Sewerage Surcharges – Test Year 2003

For customers having high strength waste discharge, the surcharge, which is in addition to other sewerage service charges, shall be computed on the following basis:

Suspended Solids (SS)	\$0.001057	per 100 cubic feet for each mg/l of SS strength above 300 mg/l
Biochemical Oxygen Demand (BOD)	\$0.001806	per 100 cubic feet for each mg/l of BOD strength above 240 mg/l
Total Kjeldahl Nitrogen (TKN)	\$0.001580	per 100 cubic feet for each mg/l of Total Kjeldahl Nitrogen (TKN) strength above 25 mg/l.

Provision

Provided, however, that to the extent the strength of a pollutant is less than eighty percent (80%) of the corresponding value for normal strength sewage, a credit shall be allowed as an offset against surcharge otherwise due, the credit shall be calculated by multiplying the above specified surcharge rate for the pollutant in question times the difference between actual pollutant concentration in mg/l and eighty percent (80%)

of the corresponding value for normal sewage. No credit shall be allowed in excess of surcharge otherwise due.

Note

The above surcharge rates, expressed on a rate per pound basis are as follows:

Suspended Solids (SS)	\$0.1695	per pound of excess strength
Biochemical Oxygen Demand (BOD)	\$0.2894	per pound of excess strength
Total Kjeldahl Nitrogen (TKN)	\$0.2532	per pound of excess strength

Summary of Findings

Table C
Proposed Industrial Pretreatment Charges – Test Year 2003

All users required to apply for and obtain a wastewater discharge permit or which are subject to federal pretreatment standards, as specified in the MSD Rules and Regulations, shall be subject to the payment of a pretreatment charge(s), as determined by the Director. Said pretreatment charge(s) shall be sufficient to recover, in whole or in part, the costs for the MSD Pretreatment Program including investigations, record keeping, administration, and monitoring of industrial waste discharges to the system.

Each industrial user shall pay a pretreatment charge(s) as follows:

Annual Administrative Charge - \$1120 per annum

Maximum Monitoring Charge - \$6.450 per monitoring event

The monitoring charge shall become effective at such time as an industrial user is subject to compliance to one or more pretreatment standards.

Further, any user which discharges any toxic pollutants which cause an increase in the cost of managing effluent or sludge from the District's treatment system shall pay for such increased costs.



Revenue

Revenue

The revenue for the District to meet costs of wastewater service is derived principally from sewerage service charges and excess strength surcharges. Other revenue sources include pretreatment charges, the sale of permits and licenses, plan review and inspection charges, connection charges, interest earned from the investment of available funds and other miscellaneous sources. The level of future revenue is projected through an analysis of historical system growth in terms of number of customers, wastewater volume, and revenue derived from charges for service.

Customer Growth

Table 1 presents a summary of the historical and projected average number of customer accounts, billable wastewater flow volume, and overall average flow per account. Since customer accounts by user classification are not maintained by the Cincinnati Water Works (CWW), customer classifications are approximated based on water meter size. The residential classification is assumed to include all 5/8-inch and 3/4-inch metered accounts billed on a quarterly basis. The commercial class includes quarterly billed customers served through water meters 1-inch and larger as well as monthly billed customers served through 5/8-inch to 3-inch meters. All municipal accounts are included in the commercial classification. The industrial customer category includes all monthly billed customers served by 4-inch or larger water meters.

Table 1
Historical and Projected Accounts

<u>Description</u>	<u>2001</u>	<u>2002</u>	<u>TY 2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
CWW						
Quarterly						
Residential	182,067	182,067	182,067	182,067	182,067	182,067
Commercial	20,338	20,338	20,338	20,338	20,338	20,338
Industrial	232	232	232	232	232	232
Subtotal	202,637	202,637	202,636	202,636	202,636	202,636
Monthly						
Residential	225	225	225	225	225	225
Commercial	608	608	608	608	608	608
Industrial	513	513	513	513	513	513
Subtotal	1,345	1,346	1,345	1,345	1,345	1,345
Total CWW	203,982	203,983	203,982	203,982	203,982	203,982
Political Bodies						
Residential	21,287	21,287	21,287	21,287	21,287	21,287
Commercial	2,492	2,492	2,492	2,492	2,492	2,492
Industrial	39	39	39	39	39	39
Warren Co.	1	1	1	1	1	1
Total Political Bodies	23,819	23,819	23,819	23,819	23,819	23,819
Total	227,802	227,802	227,801	227,801	227,801	227,801



Revenue

The decrease in billable volume parallels the adjustment in customer accounts. These adjustments do not reflect a major change in the actual number of customers or in the pattern of usage, but rather a change in methodology.

Billable wastewater volume is generally projected based upon the customer account projections and the respective average wastewater flow per account for each customer class. Total billable wastewater flow is expected to reflect the no growth scenario presented for customer growth.

Wastewater Revenue under Existing Rates

The District primarily derives revenues from a schedule of wastewater rates that includes a minimum bill, a block quantity volume charge, and an extra strength surcharge for excess pollutant customers. Charges are applied either monthly or quarterly according to customer distinction. A schedule of current rates is shown in Table 3.

Table 3
Existing Rates

	Minimum Quarterly Usage (cf)	Minimum Quarterly Charge	Minimum Monthly Usage (cf)	Minimum Monthly Charge
Minimum Monthly Charge - \$/Bill				
Meter Size				
5/8" Residential	900	39.69	500	19.31
3/4" Residential	900	51.18	500	23.17
1"	900	70.17	500	29.81
1 1/2"	900	119.23	500	45.96
2"	900	168.90	500	63.35
3"	900	433.44	500	155.25
4"	900	717.84	500	257.09
6"	900	1,418.30	500	502.99
8"	900	2,116.28	500	747.65
10"	900	2,827.92	500	1,004.74
12"	900	3,265.09	500	1,169.91

Volume Charge - \$/mcf

	Quarterly	Monthly	Minimum
First (Ccf)	900	500	
To (Ccf)	15,000	5,000	1.988 /Ccf
Over (Ccf)	15,000	5,000	1.590 /Ccf

Extra Strength Charges - \$ per mg/l per 1000 cubic feet

Biochemical Oxygen Demand (BOD)	0.001687
Suspended Solids	0.000988
Nitrogenous Oxygen Demand (NOD)	0.001476



Revenue

Due to inconsistencies in billing data and revenues experienced in previous rate studies, for this study, a detailed analysis was performed on raw billing data. The results of the analysis indicated a decrease in total billable accounts between 2000 and 2001. Projections used in this study are based on the 2001 analysis. Review of historical growth patterns in total customer counts and revenues supports the no growth scenario used for this analysis. Although revenue is generated by fees associated with new connections, billable growth is static, indicating a decrease in existing customers to offset any potential growth.

The CWW provides water service to residences and businesses in the City of Cincinnati and to areas outside the City in Hamilton County. As such, the CWW bills approximately 90 percent of the District's wastewater customers with the remaining 10 percent billed by other political subdivisions in the County.

Table 2
Historical and Projected Billable Volumes

<u>Description</u>	<u>2001</u> ccf	<u>Projected</u>				
		<u>2002</u> ccf	<u>TY 2003</u> ccf	<u>2004</u> ccf	<u>2005</u> ccf	<u>2006</u> ccf
CWW						
Quarterly						
Residential	16,445.015	16,445.000	16,445.000	16,445.000	16,445.000	16,445.000
Commercial	6,649.936	6,649.700	6,649.700	6,649.700	6,649.700	6,649.700
Industrial	989.870	990.900	989.900	989.900	989.900	989.900
Subtotal	24,084.820	24,085.600	24,084.600	24,084.600	24,084.600	24,084.600
Monthly						
Residential	1,132.489	1,133.700	1,133.700	1,133.700	1,133.700	1,133.700
Commercial	4,777.547	4,779.500	4,777.500	4,777.500	4,777.500	4,777.500
Industrial	9,959.886	9,961.500	9,961.500	9,961.500	9,961.500	9,961.500
Subtotal	15,869.922	15,874.700	15,872.700	15,872.700	15,872.700	15,872.700
Total CWW	39,954.742	39,960.300	39,957.300	39,957.300	39,957.300	39,957.300
Political Bodies						
Residential	1,679.612	1,785.200	1,785.200	1,785.200	1,785.200	1,785.200
Commercial	1,649.821	1,753.800	1,753.800	1,753.800	1,753.800	1,753.800
Industrial	190.875	201.100	201.100	201.100	201.100	201.100
Warren Co.	169.684	180.800	180.800	180.800	180.800	180.800
Total Political Bodies	3,689.992	3,920.900	3,920.900	3,920.900	3,920.900	3,920.900
Total	43,644.735	43,881.200	43,878.200	43,878.200	43,878.200	43,878.200

As shown on Table 2, total water usage or billable wastewater volume is projected at 43,878,200 hundred cubic feet (Ccf) for the study period, averaging an annual usage per account of 192.6 Ccf. This compares with historical usage per account as high as 210 Ccf. The decline in average usage per account is believed to be attributable, in part, to an increased awareness in conservation, recycling and pretreatment, and economic conditions in general.



Revenue

The minimum charge per quarter and month include the first 900 and 500 cubic feet of contributed wastewater volume respectively and is based upon the size of water service meter associated with the service. Two additional declining rate blocks are applied to those volumes exceeding the minimum. The Extra Strength Surcharges are applied to specific monitored and tested customers and apply rates per hundred cubic feet for the strength components Biochemical Oxygen Demand (BOD), Suspended Solids (SS) and Total Kjeldahl Nitrogen (TKN), each exceeding 300, 240 and 25 milligrams per liter (mg/l) respectively.

The District's sewer service revenue is projected by applying the wastewater rate structure to the appropriate projected unit of measure for each customer class. These revenue projections are summarized in Table 4. Total projected sewer service revenue, from user rates, is expected to average \$105,987,400 for the 2003 to 2006 projection period.

Table 4
Historical and Projected User Charge Revenues

Description	2001 \$	Projected				
		2002 \$	TY 2003 \$	2004 \$	2005 \$	2006 \$
CWW						
Quarterly						
Residential		50,596.400	50,998.700	50,998.700	50,998.700	50,998.700
Commercial		16,153.700	16,281.700	16,281.700	16,281.700	16,281.700
Industrial		<u>2,283.900</u>	<u>2,300.300</u>	<u>2,300.300</u>	<u>2,300.300</u>	<u>2,300.300</u>
Subtotal		69,034.000	69,580.700	69,580.700	69,580.700	69,580.700
Monthly						
Residential		1,882.900	1,888.900	1,888.900	1,888.900	1,888.900
Commercial		8,184.400	8,194.800	8,194.800	8,194.800	8,194.800
Industrial		<u>17,700.800</u>	<u>17,747.500</u>	<u>17,747.500</u>	<u>17,747.500</u>	<u>17,747.500</u>
Subtotal		<u>27,768.100</u>	<u>27,831.200</u>	<u>27,831.200</u>	<u>27,831.200</u>	<u>27,831.200</u>
Total CWW	91,772.670	96,802.100	97,411.900	97,411.900	97,411.900	97,411.900
Political Bodies						
Residential	3,693.922	3,886.700	3,886.700	3,886.700	3,886.700	3,886.700
Commercial	3,414.068	3,281.500	3,281.500	3,281.500	3,281.500	3,281.500
Industrial	634.121	1,003.100	1,003.100	1,003.100	1,003.100	1,003.100
Warren Co.	<u>404.219</u>	<u>404.200</u>	<u>404.200</u>	<u>404.200</u>	<u>404.200</u>	<u>404.200</u>
Total Political Bodies	<u>8,146.330</u>	<u>8,575.500</u>	<u>8,575.500</u>	<u>8,575.500</u>	<u>8,575.500</u>	<u>8,575.500</u>
Total	99,919.000	105,377.600	105,987.400	105,987.400	105,987.400	105,987.400

Revenues from extra strength and industrial wastes are projected to contribute an additional \$10,019,000 per year to the operating revenues.

Other operating and non-operating revenues of the District consist of revenues derived from other fees including connection charges, plan review, tap permits, and septic tank disposal. As shown on Table 5, other operating revenue is projected to remain constant at \$2,457,000 per year throughout the study period, connection charges and tap



Revenue

fees is projected to remain constant at \$4,486,000 per year throughout the study period, and non-operating revenue is projected to increase from \$3,641,000 to \$3,896,000 during the study period.

Table 5
Operating and Non-Operating Revenue

<u>Description</u>	<u>Historical</u>					<u>2001</u> \$1,000
	<u>1996 (a)</u> \$1,000	<u>1997 (a)</u> \$1,000	<u>1998 (a)</u> \$1,000	<u>1999 (a)</u> \$1,000	<u>2000 (a)</u> \$1,000	
Sewerage Service Charge	87,377	90,424	90,212	89,746	94,882	99,919
Sewerage Surcharges	11,855	11,284	10,501	9,274	10,613	11,121
Industrial Waste Charges	<u>1,004</u>	<u>564</u>	<u>1,040</u>	<u>603</u>	<u>1,019</u>	<u>984</u>
Subtotal	100,236	102,272	101,753	99,623	106,514	112,024
Other Operating Revenue						
Rental Income	74	120	108	103	77	69
Septic Tank Disposal	473	474	504	572	604	697
Tap Permits-Licenses	178	152	160	146	112	18
Inspection-Plan Review	217	247	264	309	279	327
Other (b)	<u>919</u>	<u>1,040</u>	<u>1,265</u>	<u>1,266</u>	<u>1,267</u>	<u>1,346</u>
Total Other Operating Revenue	1,861	2,033	2,301	2,396	2,339	2,457
Connection Charges-Tap Fees (c)	2,250	3,017	4,657	4,416	4,373	4,486
Non Operating Revenue	<u>7,023</u>	<u>6,475</u>	<u>11,138</u>	<u>8,274</u>	<u>7,311</u>	<u>9,673</u>
Total Revenue	111,370	113,797	119,849	114,709	120,537	128,640
	<u>Projected</u>					
	<u>2002</u> \$1,000	<u>TY 2003</u> \$1,000	<u>2004</u> \$1,000	<u>2005</u> \$1,000	<u>2006</u> \$1,000	
Sewerage Service Charge	105,378	105,987	105,987	105,987	105,987	
Sewerage Surcharges	9,035	9,035	9,035	9,035	9,035	
Industrial Waste Charges	<u>984</u>	<u>984</u>	<u>984</u>	<u>984</u>	<u>984</u>	
Subtotal	115,396	116,006	116,006	116,006	116,006	
Other Operating Revenue						
Rental Income	69	69	69	69	69	
Septic Tank Disposal	697	697	697	697	697	
Tap Permits-Licenses	18	18	18	18	18	
Inspection-Plan Review	327	327	327	327	327	
Other (b)	<u>1,346</u>	<u>1,346</u>	<u>1,346</u>	<u>1,346</u>	<u>1,346</u>	
Total Other Operating Revenue	2,457	2,457	2,457	2,457	2,457	
Connection Charges-Tap Fees (c)	4,486	4,486	4,486	4,486	4,486	
Non Operating Revenue	<u>3,641</u>	<u>3,499</u>	<u>3,613</u>	<u>3,723</u>	<u>3,896</u>	
Total Revenue	125,980	126,448	126,562	126,672	126,845	

(a) Based upon annual revenue reports of the District that reflect a cash receipts basis which may vary from audited financial statements.

(b) Includes fines, assessments, purchasing agent sales, expense reimbursements, and other miscellaneous revenue sources.

(c) Connection charges and tap-in fees are shown separate from other operating revenues as these funds are used as a source of financing for the District's capital improvement program. Projected revenues beginning in 1997 reflect an increase in connection fee charges.



Revenue Requirements

The revenue required to adequately provide for the continued operation of the District must be sufficient to meet the cash requirements of operation and maintenance (O&M) of the system; principal, interest, and reserve payments on revenue and other bond indebtedness; and recurring annual capital expenditures for replacements, system betterments, and extensions not debt financed.

Operation and maintenance expenses are those expenditures necessary to transport and treat customers' wastes as well as maintain the system in good working order. Routine annual capital expenditures, which include equipment replacements, consist of recurring annual replacements, minor extensions, and betterments which are normally revenue financed. Other capital costs include principal and interest payments, bond covenant-required payments, and the costs of infrequent major capital improvements paid directly from annual operating revenues.

Operation and Maintenance Expense

Table 6 presents a summary of actual and projected O&M expenditures for 1997 through 2006 by operating division. Major cost items for each division generally include personal services and employee fringe benefits; the cost of purchased electric power, gas and other treatment chemicals; and other contractual service and material costs.

All operation and maintenance expenditures are projected to increase for annual price escalations over 2002 costs. Forecasted operation and maintenance expense elements are expected to increase at a rate of 3 percent per year to recognize the effects of inflation.

As indicated in Table 6, annual operating and maintenance costs are projected to increase from \$82,547,000 in 2002 to \$91,759,000 in 2006. Certain Operations and Maintenance expenditures recorded in the District's accounting and operating budget process are reimbursed at the end of each year and are considered as force account expense. These are shown as a reduction to total expense in Table 6.



Revenue Requirements

Table 6
Historical and Projected Operation and Maintenance Expense

Description	Historical			Budget			Projected				
	1997 \$1000	1998 \$1000	1999 \$1000	2000 \$1000	2001 \$1000	2002 \$1000	2003 \$1000	2004 \$1000	2005 \$1000	2006 \$1000	
Office of the Director	782	1,174	1,267	2,840	4,180	5,651	5,609	5,642	5,804	5,970	
Wastewater Administration											
Billing & Collecting	3,775	3,361	4,058	4,029	4,778	4,399	4,255	4,383	4,514	4,649	
All Other	2,729	3,192	2,549	2,170	2,242	2,808	2,751	2,990	3,070	3,153	
Total	6,504	6,553	6,607	6,199	7,020	7,207	7,006	7,373	7,584	7,802	
Wastewater Engineering (a)	4,286	4,582	4,371	7,144	6,987	7,362	7,406	7,360	7,581	7,809	
Wastewater Collection (b)	13,306	13,862	13,325	14,075	15,019	17,171	17,735	18,266	18,814	19,378	
Wastewater Treatment											
Superintendent	826	997	1,257	1,401	1,567	1,976	1,952	2,097	2,160	2,226	
Mill Creek	19,151	19,163	18,822	18,146	19,289	20,709	20,764	21,974	22,634	23,312	
Little Miami	5,955	6,025	6,431	6,274	6,038	6,976	6,987	7,400	7,623	7,852	
Muddy Creek	2,862	3,001	3,043	3,070	2,996	3,021	2,989	3,205	3,300	3,398	
Sycamore	1,813	1,722	1,709	1,873	2,515	2,007	2,002	2,126	2,189	2,254	
Taylor Creek	1,504	1,579	1,608	1,821	1,843	1,720	1,696	1,824	1,878	1,935	
Polk Run	1,012	972	1,074	1,394	1,719	1,327	1,322	1,408	1,449	1,492	
Equipment Maintenance	3,122	3,037	3,228	3,090	3,322	4,634	4,481	4,916	5,063	5,215	
Total Wastewater Treatment	36,245	36,496	37,172	37,069	39,289	42,370	42,193	44,950	46,296	47,684	
Industrial Waste Management	4,013	4,181	4,175	3,392	4,052	4,286	4,255	4,351	4,481	4,616	
Planning & Project Management	3,959	4,020	4,105	-	-	-	-	-	-	-	
Process Quality Improvements	957	1,035	829	-	-	-	-	-	-	-	
Total	70,052	71,903	71,851	70,719	76,547	84,047	84,204	87,942	90,560	93,259	
Force Account Expense	(1,879)	(1,577)	(1,374)	(1,724)	(1,158)	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	
Accrual Accounting Adjustments	1,405	(3,721)	(2,514)	(1,488)	(4,544)	-	-	-	-	-	
Total Net Operation & Maintenance Expense	69,578	66,605	67,963	67,507	70,845	82,547	82,704	86,442	89,060	91,759	

(a) Includes Force Account

(b) Includes Capitalized O&M



Revenue Requirements

Capital Improvement Program

The District has developed a multi-year capital improvement program (CIP) covering its anticipated commitments for the period from 2002 through 2006. The estimated cost of the total program has been, for the purposes of this report, adjusted to include allowances for anticipated expenditures for projects yet to be identified and/or approved. A summary of the capital improvement program, totaling \$470,150,000, consists of \$353,517,000 of approved projects, \$12,896,000 of assessment project initiatives, and \$103,736,000 of potential capital additions as shown in Table 7. The approved capital program reflects spent or encumbered monies as well as the planned contract certifications for each year over the study period.

Table 7
Capital Improvement Program (a)

Description	Spent/ Encumbered \$1.000	2002 \$1.000	2003 \$1.000	2004 \$1.000	2005 \$1.000	2006 \$1.000	Total Cost \$1.000
Sewer Projects							
Combined Sewer Overflows Improvements (CSOs)	4.512	545	10.971	23.627	9.529	2.850	52.033
Sanitary Sewer Overflows (SSOs)	12.596	10.872	34.863	13.700	21.998	16.000	110.029
Water in Basement	9.495	3.060	75	360	1.000	306	14.296
Sewers	11.133	16.208	18.272	13.844	12.467	24.065	95.989
Long Range Planning / QUEST	28.660	10.260	11.604	11.733	11.452	7.461	81.171
Total Sewer Projects	66.396	40.946	75.785	63.263	56.446	50.682	353.517
Treatment Plant Projects							
Process Adds/Mods	31.862	31.809	21.407	5.681	11.978	1.000	103.736
Total Treatment Plant Projects	31.862	31.809	21.407	5.681	11.978	1.000	103.736
Miscellaneous Projects							
Assesment Projects	211	2.636	2.550	2.500	2.500	2.500	12.896
Total Approved Capital Program	98.468	75.391	99.741	71.444	70.924	54.182	470.150

(a) Reflects proposed annual certification of projects as developed by Metropolitan Sewer District staff. Annual project expenditures will deviate from scheduled certifications.

Capital Improvement Program Financing Plan

Annual expenditures for the CIP are anticipated to be met from a combination of available funds on hand, interest earnings, sewer revenues, and pre-determined annual transfers from the Surplus Fund. The 2002 beginning balance in the Improvement Fund is estimated to be \$13,452,000 as shown on Line 1 of Table 8. Transfers from surplus are anticipated to total \$4,000,000 in 2002 as indicated on Line 8. Interest is earned at the rate of two percent annually on carried balances as indicated on Line 9 of the Table.



Revenue Requirements

Table 8
Capital Improvement Financing Plan

Line No.	Description	2002 \$1,000	2003 \$1,000	2004 \$1,000	2005 \$1,000	2006 \$1,000	2002-2006 \$1,000
Source Of Funds							
1	Beginning of Year Fund Balance	13,452	0	0	0	0	13,452
2	Note Proceeds	0	0	0	0	0	0
3	Revenue Bond Proceeds (a)	0	50,000	50,000	50,000	50,000	200,000
4	OWDA Proceeds	14,160	7,633	8,979	6,504	0	37,276
5	Federal Grants						0
6	Connection Fees	4,486	4,486	4,486	4,486	4,486	22,430
7	Other						0
8	Transfer from Surplus Account (b)	4,000	0	0	0	0	4,000
9	Interest Income (c)	501	627	641	616	550	2,935
10	Total Funds Available	36,599	62,746	64,106	61,606	55,036	280,093
Application Of Funds							
Major Capital Improvements							
11	Annual Certifications	75,391	99,741	71,444	70,924	54,182	371,682
12	Prior Year(s) Commitments	0	38,935	80,894	93,209	107,480	0
13	Unexpended Carryforward	(38,935)	(80,894)	(93,209)	(107,480)	(111,513)	(111,513)
14	Net Annual Expenditures	36,456	57,782	59,129	56,654	50,149	260,169
14	Bond Issuance Costs (d)	0	1,250	1,250	1,250	1,250	5,000
15	OWDA Debt Issuance Expense	143	77	91	66	0	377
16	Note Paydown	0	0	0	0	0	0
17	Debt Service Reserve	0	3,637	3,637	3,637	3,637	14,548
18	Total Funds Applied	36,599	62,746	64,106	61,606	55,036	280,093
19	End of Year Fund Balance	0	0	0	0	0	0

(a) Proposed bonds are assumed to be issued on July 1 of each year in which bonds are sold.

(b) Projected drawdown schedule of Surplus Account to fund major capital improvement expenditures.

(c) Estimated at 2.0 percent rate of interest on average balance of funds available for investment.

(d) Bond issuance costs include an allowance for estimated bond underwriter and counsel fees, bond discount, and miscellaneous issuance expense.

For purposes of this report, it is assumed that while the District is eligible to participate in the state of Ohio's wastewater construction loan program, all long-term financing obligations will be met through the use of locally issued 25-year revenue bonds. Bond Anticipation Notes (BAN) may be used as an interim source of financing should the District not issue revenue bonds exactly as reflected herein.

The application of funds shows that \$371,682,000 in major capital commitments; \$5,377,000 of bond issuance costs; and \$14,548,000 for debt service reserve deposits are projected over the planning period. Annual certifications, shown on Line 11 of Table 8,



M S D

Revenue Requirements

represent annual encumbrance obligations as scheduled in the capital improvement program. Inasmuch as some projects will be constructed over a two to three year period, some project expenditures are indicated to be carried forward to subsequent years as shown on Line 13 of Table 8. The resulting net annual expenditures to be largely bond financed are shown on Line 14. The bond issuance costs include an allowance for estimated bond underwriter and counsel fees, bond discount, and miscellaneous issuance costs. The issuance costs are estimated at 2.50 percent of the amount of bonds issued. Deposits to the bond reserve account, required to maintain a balance equal to the maximum annual principal and interest requirement on all revenue bonds, is projected to be made from a portion of the proposed bond sale proceeds.

Debt Service Requirements

A summary of the District's existing and proposed debt service requirements is shown in Table 9. Existing debt service requirements are related to the 1993, 1995, 1997, 2000 and 2001 Series revenue bonds; separate Ohio Water Development Authority (OWDA) contract loans; and a Water Pollution Control Loan Fund (WPCLF) loan.

Debt service requirements on the proposed revenue bond issues required during the study period are based upon equal annual principal and interest payments over a period of 25 years at an estimated net effective interest rate of 5.25 percent. The bonds are expected to be issued on July 1 of each year 2003 through 2006.



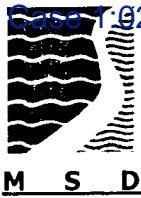
Revenue Requirements

Table 9
Existing and Projected Long-Term Debt Service

	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
<u>Existing Revenue Bonds</u>					
1993 Series	10.946	10.949	10.949	10.945	18.433
1995 Series	7.857	7.862	7.862	7.868	4.897
1997 Series	8.416	8.416	8.417	8.418	8.418
2000 Series	3.004	3.003	3.004	3.003	3.000
2001 Series	8.648	8.637	8.641	8.636	4.120
Total	38.871	38.867	38.873	38.870	38.867
<u>Proposed Revenue Bonds (a)</u>					
2003 Series		1.819	3.637	3.637	3.637
2004 Series			1.819	3.637	3.637
2005 Series				1.819	3.637
2006 Series					1.819
Total	0	1.819	5.456	9.093	12.730
Total Revenue Bonds	38.871	40.686	44.329	47.963	51.597
<u>Other Existing Debt (b)</u>					
Other	1.996	1.875	1.810	1.810	1.810
Total	1.996	1.875	1.810	1.810	1.810
<u>Other Proposed Debt (b)</u>					
Other	0	0	1.148	1.767	2.495
Total	0	0	1.148	1.767	2.495
Total Other Debt	1.996	1.875	2.958	3.577	4.305
Total Debt Service	40,867	42,561	47,288	51,540	55,903

(a) Proposed revenue bond debt service is based upon the issuance of bonds with a 25 year term and interest rate of 5.25 percent per annum.

(b) Includes OWDA, OPWC, and WPCLF bonds.



Revenue Requirement Levels

There are three approaches to establishing utility revenue requirements. The first approach identifies the cash requirements of utilities – operation and maintenance expense, principal and interest to satisfy debt service requirements of bonds or loan programs, capital improvements funded from revenues, and deposits to reserve funds. The second addresses the utilities' financial statements. Operation and maintenance expenses and bond or loan generated debt service interest are the same as in the cash approach. However, the financial statements recognize depreciation of existing assets instead of actual cash spent on capital related items. The third approach addresses covenants that the utilities have made to bond holders, financing agents, or mandated policies in regards to minimum reserve balances.

The financial plan presented herein was developed to satisfy annual revenue requirements determined under each of the three approaches. If meeting the requirements of any two approaches does not satisfy the requirements of the third, adjustments must be made. In this manner the value of the system will remain stable and commitments of the District will be met.

The pro forma operation statement or cash flow analysis presented in Table 10 provides a basis for evaluation of the adequacy of revenues under existing rates to meet the projected revenue requirements of the District for the period 2002 through 2006. The indicated increased revenue levels shown on Lines 2 through 6 of Table 10 are based on the effective dates and magnitude of required revenue adjustments considered necessary to meet the revenue requirement obligations of the District as well as required revenue bond coverage provisions. The effective amount of increased revenues shown during the first year of each annual rate adjustment includes an allowance for the effect of bill proration and billing lag on the level of revenues to be received.



Revenue Requirements

Table 10

Estimated Revenues and Revenue Requirements under Increased Rates

Line No.	Description	2002 \$1,000	2003 \$1,000	2004 \$1,000	2005 \$1,000	2006 \$1,000
Revenue						
1	Revenue from Existing Rates	115,396	116,006	116,006	116,006	116,006
Increased Revenue (a)						
2	1/1/03 - 7.0%		6,997	8,120	8,120	8,120
3	1/1/04 - 7.0%			7,487	8,689	8,689
4	1/1/05 - 7.0%				8,011	8,011
5	1/1/06 - 7.0%					8,494
6	Total Revenue from Rates	115,396	123,003	131,613	140,826	149,320
7	Other Operating Revenue	2,457	2,457	2,457	2,457	2,457
8	Nonoperating Revenue	456	487	512	540	580
9	Total Revenue	118,309	125,947	134,582	143,823	152,357
Revenue Requirements						
10	O&M Expense	82,547	82,704	86,442	89,060	91,759
Debt Service Requirements						
11	Existing Revenue Bonds	38,871	38,867	38,873	38,870	38,862
12	Proposed Revenue Bonds	-	1,819	5,456	9,093	12,730
13	Total Revenue Bonds	38,871	40,686	44,329	47,963	51,592
14	Other Existing Debt Obligations	1,996	1,875	1,810	1,810	1,810
15	Other New Debt Obligations	-	-	1,148	1,767	2,495
16	Total Debt Service	40,867	42,561	47,287	51,540	55,897
17	Annual Equipment Purchases	3,192	2,696	2,777	2,860	2,945
18	Transfer to Surplus Account	(10,500)	(2,100)	(2,500)	(100)	-
19	Total Revenue Requirements	116,106	125,861	134,006	143,360	150,601
20	Annual Net Balance	2,203	86	576	463	1,756
21	Cumulative Annual Balance (b)	13,782	13,868	14,443	14,907	16,663
22	Minimum Required Operating Balance	13,758	13,784	14,407	14,843	15,293
Debt Service Coverage						
23	Net Revenue from Operations	37,826	45,311	50,301	56,990	62,892
24	Transfer to Surplus Account (c)	-	-	-	-	-
25	Connection Fee Revenue	4,486	4,486	4,486	4,486	4,486
26	Other Interest Income	3,084	2,911	3,000	3,082	3,215
27	Revenue Available for Coverage	45,396	52,708	57,787	64,558	70,593
Debt Service Coverage for:						
28	Revenue Bonds	117%	130%	130%	135%	137%
	Minimum Required	125%	125%	125%	125%	125%
	MSD Policy	150%	150%	150%	150%	150%
29	Total Debt Service	111%	124%	122%	125%	126%
	Minimum Required	1.1	1.1	1.1	1.1	1.1

(a) Reflects effective amount of increased revenue to be received following the implementation of a rate adjustment.

(b) Includes a beginning of year balance of \$11,579,000 at November 30, 2001. An annual balance equal to the unencumbered balance in Fund 701.

(c) Represents one-half (50%) of amount transferred to the surplus account during the year.



Revenue Requirements

Operation and maintenance expenses and debt service requirements comprise over 95 percent of the District's total revenue requirements over the planning period. Other requirements include annual equipment purchases and generation of sufficient amounts of net revenues to meet required revenue bond coverage provisions. A number of events have impacted the District's ability to generate the level of revenues anticipated in previous studies. The most critical event has been the lack of anticipated customer growth. Complicating the issue is the reduction in surcharge revenue resulting from conservation, recycling and pretreatment. Due to this shortfall in projected revenues, a transfer from the surplus fund to the operating fund may be needed to meet fund balance requirements. Proposed increases will address this issue over the study period.

Total revenue requirements are summarized on Line 19 of Table 10. The ending balance/deficit available shown on Line 20 is the projected Operating Reserve end-of-year cash balance from the annual operation of the Utility. Operating reserve requirements are listed on Line 21 and are needed to maintain the mandated two month's expenditures requirement in the Operating Fund.

Presented at the bottom of Table 10 is an analysis of the District's ability to provide adequate debt service coverage on revenue bonds and total debt service obligations. The District's current revenue bond rate covenant requires that system net revenues (total revenue less operation and maintenance expense) be sufficient to provide at least 125 percent coverage of the annual revenue bond debt service requirements due each year, and 110 percent coverage of total debt service obligations.



Cost of Service Allocations

The revenue requirements to be derived from rates and charges for wastewater service are synonymous with the definition of the cost of service. In developing equitable rate structures, revenue requirements are allocable to the various customer classifications according to the service rendered. Allocations of these requirements to customer classes should take into account the quantity of wastewater contributed, peak rates of wastewater flow, strength of wastewater, number of customers, and other relevant factors. Cost of service considerations must also recognize EPA rules and regulations required under the Federal Clean Water Act, as amended, relating to "user charges" as subsequently discussed.

Cost of Service to be Allocated

In analyzing costs of service for allocation to customer classes, the annual revenue requirements for the calendar year 2003 has been selected as the test year requirement for the period in which the rates are to be in effect. Presented in Table 11 is a summary of the District's estimated annual cost of service to be met from wastewater charges for the 2003 test year. As indicated in Table 11, costs recognized in the analyses for allocation purposes consist of operation and maintenance expense (O&M), user charge replacements, and capital financing related costs.

Table 11
Cost of Service to be Recovered from Rates
Test Year 2003

Line No.	Description	O&M Expense	User Charge Replacement	Capital Costs	Total
		\$1,000	\$1,000	\$1,000	\$1,000
	Revenue Requirements				
1	Operation and Maintenance Expense	82,704			82,704
2	User Charge Replacements		5,055		5,055
3	Debt Service Requirements			37,506	37,506
4	Capital Outlay			2,696	2,696
5	Total	82,704	5,055	40,202	127,961
	Less Other Revenue Sources				
6	Surplus Fund Transfer and Change in Operating Balance	1,302	80	633	2,014
7	Other Operating Revenue	2,457			2,457
8	Nonoperating Revenue	328		159	487
9	Annualized Revenue Adjustments (a)	(726)	(44)	(353)	(1,123)
10	Total	3,361	35	439	3,835
11	Total Cost of Service	79,343	5,020	39,763	124,126

(a) Represents effect of partial year rate adjustment and billing lag following an increase in revenues.



Cost of Service Allocations

EPA user charge requirements mandated under the Federal Clean Water Act, which the District must comply with, cover only the O&M expense portion, including replacements, of the total costs. These costs are often referred to as OM&R. The O&M expenses, shown on Line 10, Column 1 of Table 11, represent the net expense of the District to be met from user charges and include a portion of the cost burden associated with equipment replacements needed to maintain the expected service life of individual property units as defined by EPA. While the District has established accounting procedures to separately identify equipment replacements once incurred, the District's budgetary system for forecasting expenditures does not specifically identify equipment replacement costs separately. Replacement cost analysis suggests a reinvestment of \$4.5 to \$5.0 million per year would address the user charge needs. The total of the net O&M expense amount of \$79,343,000 and the additional replacement cost allowance of \$5,020,000, or a total of \$84,363,000, comprise the total OM&R cost element considered subject to EPA user charge requirements as used in these cost analyses and shown in subsequent tables.

Capital cost consists of debt service on existing and proposed bonds, and additional funding related to capital improvement program requirements. The total annual capital costs for 2003 be recovered through wastewater charges, as shown in Column 3 of Table 13, is estimated to be \$39,763,000 after deduction for the amount met from other non-operating revenue sources.

The total cost of service to be met from wastewater charges is estimated to be \$124,126,000 as shown on Line 11, Column 4 of Table 11.

Functional Cost Components

In developing an equitable rate structure, revenue requirements are allocated to the various customer classifications according to the cost of service rendered. Customers are classified to reflect groups of customers with similar service requirements who can be served at similar cost. Each class represents a particular type of service requirement or load on the System in terms of customer related infiltration/inflow (I/I), volume related I/I, flow, BOD strength, SS strength, TKN strength, and number of customers served.

As a basis for allocating costs of service among customer classes, costs are first allocated to functional cost components, then allocated to cost categories, and subsequently distributed to customer classes. In this study there are five primary cost



Cost of Service Allocations

components: (1) flow, or volume costs, (2) capacity costs, (3) wastewater strength costs, (4) customer costs, and (5) directly assigned costs.

Volume costs are those which vary directly with the quantity of wastewater contributed and include capital costs related to investment in system facilities which are sized on the basis of wastewater volume, O&M expense related to those facilities, and the expense of volume related treatment chemicals and electric power associated with the volume of wastewater treated.

Capacity related costs include capital costs related to investment in system facilities which are sized on the basis of maximum rates of wastewater flow and the operation and maintenance expense related to those facilities.

Wastewater strength costs consist of the operation and maintenance expense and capital costs related to system facilities which are designed principally on the basis of the quantity of pollutants in the wastewater. Strength costs are further separated into components varying with SS, BOD, and TKN loadings.

Customer costs are those costs which tend to vary in proportion to the number of customers served. These include customer related billing and collection expense.

Pretreatment costs are those costs required for the administration, monitoring, and enforcement of the District's industrial waste monitoring and pretreatment program. These costs vary in proportion to the number of businesses and industries subject to categorical pretreatment standards, and to the degree in which these businesses must be monitored to insure compliance with wastewater discharge requirements. These costs are directly assigned to those customers that incur the cost.

Allocation to Cost Components

Each element of cost is allocated to functional cost components on the basis of the parameter or parameters having the most significant influence on the magnitude of that element of cost. O&M expense items are allocated directly to appropriate cost components, while the allocation of capital and replacement costs is based upon a detailed allocation of related capital investment. The separation of costs into functional components provides a means for distributing such costs to the various classes of customers on the basis of their respective responsibilities for each particular type of service.



Cost of Service Allocations

In the allocation of O&M expense and investment, costs are allocated directly to cost components to the extent possible. General and administrative cost elements are then allocated on the basis of the allocation of other costs to which they are most nearly related.

Plant Investment, Replacement, and Capital Costs

The estimated test year plant investment in wastewater facilities consists of plant in service as of December 31, 2001, construction work in progress, and the estimated cost of capital improvements through 2003. Allocation of the existing and planned investment in wastewater facilities to functional cost components is shown in Table 12.

Table 12
Allocation of Plant Investment to Functional Cost Components – Test Year 2003

		Wastewater Strength					
Line							
Line No.	Description	Total	Volume	Capacity	SS	BOD	TKN
		\$	\$	\$	\$	\$	\$
	Plant In Service						
1	Raw Wastewater Pumping	37,816.000		37,816.000			
2	Preliminary Treatment	37,617.000		37,617.000			
3	Primary Sedimentation	16,609.000	16,609.000				
4	Aeration	60,710.000	35,325.000			19,699.000	5,686.000
	Biotreatment	-	-				
5	Secondary Sedimentation	46,519.000	46,519.000				
6	Chlorination	8,437.000	8,437.000				
7	Sludge Handling & Treatment	101,078.000			50,539.000	45,936.000	4,603.000
8	Sludge Dewatering & Disposal	159,933.000			79,966.000	71,982.000	7,985.000
9	Outfall Diversion Sewer	5,498.000		5,498.000			
10	General Facilities	33,562.000	7,565.000	5,728.000	9,236.000	9,740.000	1,293.000
11	Total Major Treatment	507,779.000	114,455.000	86,659.000	139,741.000	147,357.000	19,567.000
12	Other Treatment Facilities	10,860.000	3,367.000	2,172.000	1,412.000	3,909.000	
13	Laboratory Facilities	12,636.000	3,917.000	2,527.000	1,643.000	4,549.000	
14	Pump & Lift Stations	20,430.000		20,430.000			
15	Collection System	432,622.000		432,622.000			
16	General	19,897.000	2,461.000	11,005.000	2,886.000	3,150.000	395.000
17	Total Plant Investment	1,004,224.000	124,200.000	555,415.000	145,682.000	158,965.000	19,962.000
18	Less Contributed Facilities	210,520.000	33,539.000	105,670.000	30,568.000	35,167.000	5,576.000
19	Total Net Investment	793,704.000	90,661.000	449,745.000	115,114.000	123,798.000	14,386.000
	Capital Additions						
20	Secondary Sedimentation	282.000	282.000				
	Chlorination	-	-				
21	Sludge Handling & Treatment	15,220.000			7,610.000	6,849.000	761.000
22	Sludge Dewatering & Disposal	8,644.000			4,322.000	3,893.000	429.000
23	Outfall Diversion Sewer	-					
24	General Facilities	47,529.000	10,252.000	7,743.000	13,552.000	14,127.000	1,855.000
25	Total Major Treatment	71,675.000	10,534.000	7,743.000	25,484.000	24,869.000	3,045.000
26	Other Treatment Facilities	-	-	-	-	-	-
27	Pump & Lift Stations	3,210.000		3,210.000			
28	Collection System	176,296.000		176,296.000			
29	Pretreatment	-					
30	General	22,290.000	2,392.000	13,187.000	3,039.000	3,264.000	408.000
31	Total Capital Additions	273,471.000	12,926.000	200,436.000	28,523.000	28,133.000	3,453.000
32	Total Net Investment	1,067,175.000	103,587.000	650,181.000	143,637.000	151,931.000	17,839.000
	Allocated:						
33	Capital Cost	39,763.000	3,859.000	24,226.000	5,352.000	5,661.000	665.000
34	Replacement Cost	5,020.000	1,098.000	1,017.000	1,314.000	1,409.000	182.000



Cost of Service Allocations

The investment in existing plant and capital additions is allocated to cost components on a design or cost causative basis recognizing the principal function governing the design of the facility. For example, raw wastewater pumping and preliminary treatment facilities are basically designed to meet peak hydraulic flow requirements and are allocated to the capacity cost function. Primary and secondary clarifiers, aeration and chlorination basins, are designed in relation to the volume of wastewater flow and detention time and are allocated to the volume cost component. Equipment for aeration facilities are generally designed in accordance with the BOD and TKN strength loadings. Since the sludge which is removed from the wastewater in the treatment process results from the reduction of suspended solids, BOD, and TKN concentrations, the costs associated with sludge handling and disposal facilities are allocated proportionately between the strength cost components.

The investment for general elements of the treatment plant, such as laboratory, garage and shop facilities, is included in treatment general plant and is allocated in relation to total treatment plant investment in other facilities. The allocation of major treatment plant investment to functional cost components, as shown on Lines 11 and 25 of Table 12 is the sum of the respective allocations of the investment for each individual major treatment plant facility using the methods discussed above.

The investment in other treatment facilities, representing several package and smaller treatment plants, is allocated to cost components based upon estimated functional requirements of the major plants. Collection system facilities including pump and lift stations are basically designed to meet peak hydraulic flow requirements; therefore, the investment in these facilities is allocated entirely to the capacity related cost component. The investment in general plant facilities, including vehicles, furniture, and miscellaneous equipment not directly allocable to a specific cost function, is allocated in relation to the total investment in other system facilities.

The resulting allocation of total net investment shown on Line 32 of Table 12 is the basis for recovery of the test year capital cost of \$39,763,000 as shown on Line 33 of the table. User charge replacement costs of \$5,020,000 shown on Line 34 are allocated to cost components on the basis of the total existing investment in treatment facilities and pump and lift stations.



Cost of Service Allocations

Allocation of Operation and Maintenance Expense

Projected operation and maintenance expense for the test year is allocated to cost components in generally the same manner as plant investment. The results of the allocation are shown in Table 13.

Table 13
Allocation of Operation and Maintenance Expense to Functional Cost Components
Test Year 2003

Line No.	Description	Total	Volume	Capacity	Wastewater Strength			Industrial Monitoring and Surveillance	
					Suspended Solids	BOD	TKN	Customer Billing	Pretreatment
		\$	\$	\$	\$	\$	\$	\$	\$
Wastewater Treatment									
Major Treatment Facilities									
1	Raw Wastewater Pumping	2,942,000	961,000	1,981,000					
2	Preliminary Treatment	1,257,000	108,000	1,149,000					
3	Primary Sedimentation	751,000	751,000						
4	Aeration	4,140,000	582,000			2,759,000	799,000		
5	Biotreatment	84,000	42,000			32,000	10,000		
6	Secondary Sedimentation	1,505,000	1,505,000						
7	Chlorination	1,638,000	1,638,000						
8	Sludge Handling & Treatment	5,426,000			2,717,000	2,458,000	251,000		
9	Sludge Dewatering & Disposal	12,382,000			6,187,000	5,643,000	552,000		
10	Laboratory	<u>1,676,000</u>	<u>572,000</u>		<u>523,000</u>	<u>519,000</u>	<u>62,000</u>		
11	Subtotal	31,801,000	6,159,000	3,130,000	9,427,000	11,411,000	1,674,000		
Other Treatment Facilities									
12	Other Treatment Facilities	2,520,000	857,000	807,000	202,000	654,000			
13	Pump and Lift Stations	1,439,000	102,000	1,337,000					
14	Equipment Maintenance	4,481,000	824,000	1,007,000	1,257,000	1,249,000	144,000		
15	Supervision	<u>1,952,000</u>	<u>359,000</u>	<u>439,000</u>	<u>548,000</u>	<u>544,000</u>	<u>62,000</u>		
16	Total Treatment	42,193,000	8,301,000	6,720,000	11,434,000	13,858,000	1,880,000		
Wastewater Collection									
17	Wastewater Collection	17,735,000		17,735,000					
Engineering									
18	Engineering	5,906,000	573,000	3,598,000	795,000	841,000	99,000		
Industrial Waste									
19	Industrial Waste	4,255,000	431,000	349,000	594,000	720,000	98,000	606,000	1,457,000
Administration									
20	Billing and Collection	4,255,000						4,255,000	
21	All Other	2,751,000	293,000	1,247,000	440,000	445,000	52,000	185,000	63,000
22	Office Of The Director	<u>5,609,000</u>	<u>596,000</u>	<u>2,543,000</u>	<u>897,000</u>	<u>907,000</u>	<u>106,000</u>	<u>377,000</u>	<u>129,000</u>
23	Total Allocated Expense	82,704,000	10,194,000	32,192,000	14,160,000	16,771,000	2,235,000	4,817,000	1,649,000
24	Less Revenue from Other Sources	<u>3,361,000</u>	<u>509,000</u>	<u>1,308,000</u>	<u>575,000</u>	<u>682,000</u>	<u>91,000</u>	<u>196,000</u>	
25	Net O & M Expense	79,343,000	9,685,000	30,884,000	13,585,000	16,089,000	2,144,000	4,621,000	1,649,000

Treatment plant O&M expenses; excluding electric power, natural gas, and chemical costs, are allocated to the volume, capacity, SS, BOD, TKN, surcharge, and pretreatment related cost components based upon the estimated operating expense associated with each function. Electric power expense for raw wastewater pumping and preliminary treatment, and the cost of chemicals are allocated to the volume component. Projected test year power costs incurred in the operation of activated sludge facilities are allocated to the BOD and TKN cost components. Costs for sludge handling and disposal are allocated to SS, BOD, and TKN components reflecting the functions for which these costs were incurred. Operation supervision, equipment maintenance, and laboratory



Cost of Service Allocations

expense are allocated on the basis of other allocated treatment operation and maintenance expense less power and chemical costs.

Expenses for the maintenance and repair of the wastewater collection system are allocated to the capacity cost function. Capital projects and engineering related expenses are allocated on the basis of the projected investment in total capital additions. Expenses associated with the industrial waste activities for the laboratory, extra strength surcharge, and pretreatment monitoring and surveillance are allocated to cost components in direct proportion to the estimated expense associated with each. Billing and collection expense is allocated to the customer related cost function. General expenses related to administration and the director's office are allocated among cost components in proportion to the total of all other expense, less power, natural gas, and chemical costs.

The total 2003 O&M expense is projected to be \$82,704,000, as shown on Line 23 of Table 13. Revenue credits consisting of interest income earned on the operating fund, other operating revenues, and annualized revenue adjustments were allocated to cost functions and deducted from the allocated O&M expense resulting in a net O&M expense of \$79,343,000 to be recovered from wastewater charges.

Summary of Allocation to Functional Cost Components

Table 14 presents a summary of the test year cost of service consisting of the previous allocation of operating expense, replacement, and capital costs to functional cost components.

Table 14
Summary of Allocation to Functional Cost Components – Test Year 2003

Cost Component	Operating Expense	Replacement Costs	Capital Costs	Total Cost of Service
	\$	\$	\$	\$
Volume Related Cost	9,685,000	1,098,000	3,859,000	14,642,000
Capacity Related Cost	30,884,000	1,017,000	24,226,000	56,127,000
Strength Related Cost				
Suspended Solids	13,585,000	1,314,000	5,352,000	20,251,000
BOD	16,089,000	1,409,000	5,661,000	23,159,000
TKN	2,144,000	182,000	665,000	2,991,000
Customer Cost	4,621,000			4,621,000
Industrial Monitoring & Surveillance				
Surveillance				
Surcharge	686,000			686,000
Pretreatment	1,649,000			1,649,000
Total Cost of Service	79,343,000	5,020,000	39,763,000	124,126,000



Distribution of Costs to Customer Classes

The total cost responsibility of each class of service may be established by developing unit costs of service for each cost function and assigning those costs to the customer classes based on the respective service requirements of each class.

Customer Classifications

Wastewater customers have been separated into five principal categories including residential, commercial, industrial, surcharge, and pretreatment. Each class represents a particular type of service requirement or load on the system in terms of wastewater volume, capacity, strength, number of customers served, and direct cost responsibility. The individual customers are billed on either a quarterly or monthly billing period.

The residential classification typically includes all 5/8-inch and 3/4-inch metered accounts billed as one or two family units which are assumed to demonstrate residential customer requirements for service. The commercial class represents monthly billed customers having 5/8-inch to 2-inch meters, together with quarterly customer meter sizes 1-inch and larger. In addition, all municipal accounts are considered to have similar characteristics as commercial customers and are included in the commercial class. The industrial customer category includes all monthly billed customers having 3-inch or larger meters and having service characteristics expected of industrial users. The surcharge category represents customers billed for excess strength waste discharges to the wastewater system. The pretreatment category includes all industrial and business related customers having wastewater discharge characteristics that are considered subject to regulated national categorical standards.

Units of Service

The determination of customer class responsibility for costs of service requires that each general customer class be allocated a portion of the volume, capacity, strength, and customer costs of service according to its respective service requirements, and that all costs directly associated with a specific customer class be allocated to that class.

Volume related costs vary with and are allocated on the basis of the volume of wastewater conveyed and treated by the wastewater system. Capacity related costs are those associated with providing maximum capacity for the conveyance of wastewater, and are distributed to customer classes on the basis of estimated maximum rates of wastewater flow. Strength costs are related to the function of reducing wastewater SS,



Cost of Service Allocations

BOD, and TKN concentrations and are allocated to customer classes in proportion to respective strength loadings. Customer costs, which consist of billing and collection costs, are allocated on the basis of the number of customer equivalent bills. Pretreatment costs are those costs required to administer the industrial pretreatment program and are allocated in part to all nonresidential customers on the basis of equivalent meters, and to pretreatment customers on the basis of permitted industries and the number of sampling/monitoring events required.

The estimated test year service requirements or units of service for the various customer classes are shown in Table 15. Estimates of annual wastewater volume and number of bills are based on projections of the number of wastewater customers and their corresponding water use, adjusted to exclude exempted water used but not discharged to the wastewater system. Historical data and information regarding wastewater customers and water use were provided from utility records. An analysis of wastewater bills rendered during a recent period was used as a basis for estimating the wastewater volume of each customer class during the test year.

Table 15
Estimated Units of Service – Test Year 2003

Line No.	Description	Residential	Commercial	Industrial	Surcharge	Pretreatment	Total
Wastewater Volume - 1,000 Ccf							
1	Contributed Wastewater Volume	19.545	13.181	11.153			43.879
2	Infiltration/Inflow	<u>25.743</u>	<u>9.450</u>	<u>4.827</u>			<u>40.020</u>
3	Total	45.288	22.631	15.980			83.899
Wastewater Capacity Flow Rate - Ccf/day							
4	Contributed Wastewater Volume	80.321	54.169	45.832			180.322
5	Infiltration/Inflow	<u>211.586</u>	<u>77.666</u>	<u>39.674</u>			<u>328.926</u>
6	Total	291.907	131.835	85.506			509.248
Wastewater Strength - 1,000 pounds							
7	Suspended Solids	53.618	29.989	22.904	8.213		114.724
8	BOD	24.392	16.450	13.918	40.451		95.211
9	TKN	5.458	2.940	2.192	2.262		12.852
Customer Billing Units							
10	Equivalent Bills	821.837	118.362	37.854	3.800		981.853
Pretreatment							
11	Customers					181	
12	Sampling Events					400	
13	Equivalent Meters					69.185	

Ccf - Hundred cubic feet

Ccf/day - Hundred cubic feet per day

Wastewater collected and treated by the District consists of two elements: (1) contributed sanitary wastewater flow, and (2) infiltration/ inflow of ground water and stormwater runoff into the sewers. Contributed wastewater flow is that portion of the

Cost of Service Allocations

annual water use or other discharge of each customer class which enters the sanitary wastewater system. Estimates of the contributed volume of each class is generally based upon wastewater billing records that exclude estimated water use not reaching the wastewater system, such as that used for lawn sprinkling and car washing or included in manufactured products.

Based on a historical analysis, it is estimated that the amount of flow entering the sewers through I/I will average 48 percent of the total wastewater flow reaching the treatment plants. Each customer class should bear its proportionate share of the costs associated with I/I as the wastewater system must be adequate to convey and process the total flow. Recognizing that the major cost responsibility for I/I is allocable on an individual connection basis, three-fourths of the I/I volume is allocated to customer classes based on estimated customer equivalent connections with the remaining one-fourth allocated on the basis of contributed volume.

The responsibility for collection system capacity cost varies with the estimated peak flow rates of contributed wastewater and infiltration attributable to each customer class. Infiltration/inflow is estimated to comprise 64 percent of the total peak flow.

The SS, BOD, and TKN responsibility of each customer class is based on estimated average domestic strength concentrations and contributed wastewater volume for each class. Average SS, BOD, and TKN concentrations of contributed domestic sewage are estimated to be 275 mg/l, 200 mg/l, and 25 mg/l, respectively. An average I/I strength allowance of 125 mg/l and 15 mg/l for suspended solids and TKN respectively was also used to balance total wastewater loadings contributed by normal and excess strength users with the total wastewater loadings received at the treatment plants.

Suspended solids, BOD, and TKN strengths in excess of normal domestic limits are assigned to a surcharge classification, and are shown separately in Table 17. The estimates of excess strength quantities for surcharge customers are based on extra strength data provided by historical surcharge billings of the District.

The annual number of equivalent bills applicable to each class of wastewater service is based upon the respective number of bills rendered and estimated ratios of average billing and collection costs of various sized meters to that of a 5/8 inch meter.

Pretreatment units of service represent the number of industrial customers subject to categorical standards, the number of sampling events considered necessary to monitor affected industries, and the number of equivalent metered connections considered to share in a portion of the costs for administering the pretreatment program.



Cost of Service Allocations

Cost of Service Allocations

The costs of service are distributed to the various customer classes by applying the unit costs of service to respective service requirements. The test year unit cost of service for each functional cost component is based on the total cost divided by the applicable units of service as shown in Table 16. The total unit costs of service applied to the respective requirements for each customer class results in the total cost of service for each customer class.

Table 16
Unit Costs of Service and Customer Class Allocation - Test Year 2003

Line Line No.	Description	Total \$	Volume \$	Capacity \$	Wastewater Strength			Industrial Monitoring and Surveillance				
					SS \$	BOD \$	TKN \$	Billing \$	Surcharge \$	Customer \$	Sampling \$	Permits \$
1	Cost of Service											
2	Operation & Maintenance Expense	79,343,000	9,685,000	30,884,000	13,585,000	16,089,000	2,144,000	4,621,000	686,000	452,300	993,700	203,000
3	Replacement Costs	5,020,000	1,098,000	1,017,000	1,314,000	1,409,000	182,000	-	-	-	-	-
4	Subtotal	84,363,000	10,783,000	31,901,000	14,899,000	17,498,000	2,326,000	4,621,000	686,000	452,300	993,700	203,000
5	Other Capital Costs	39,763,000	3,859,000	24,226,000	5,352,000	5,661,000	665,000	-	-	-	-	-
5	Total Cost of Service	124,126,000	14,642,000	56,127,000	20,251,000	23,159,000	2,991,000	4,621,000	686,000	452,300	993,700	203,000
6	Units of Service											
6	Total Units		83,899,000 Ccf	509,248 Ccf/day	114,724 1,000 lbs.	95,211 1,000 lbs.	12,852 1,000 lbs.	981,853 Eq. Bills		69,185 Eq. Meters	400 Sampling Events	181 Customers
7	Unit Cost of Service											
7	Operation & Maintenance Expense		0.1154	60.6463	118.4144	168.9826	166.8223	4.7064		6.5375	2.48425	1.12155
8	Replacement Costs		0.0131	1.9971	11.4536	14.7987	14.1612	-		-	-	-
9	Subtotal		0.1285	62.6434	129.8680	183.7813	180.9835	4.7064		6.5375	2.48425	1.12155
10	Other Capital Costs		0.0460	47.5721	46.6510	59.4574	51.7429	-		-	-	-
11	Total Unit Cost of Service		0.1745	110.2155	176.5190	243.2387	232.7264	4.7064		6.5375	2.48425	1.12155
Allocation to Customer Classes												
12	Residential Units of Service		45,288,000	291,907	53,618	24,392	5,458	821,837				
13	OM&R Costs	40,408,000	5,820,000	18,286,000	6,963,000	4,483,000	988,000	3,868,000				
14	Other Capital Costs	20,205,000	2,084,000	13,887,000	2,502,000	1,450,000	282,000	-				
15	Total	60,613,000	7,904,000	32,173,000	9,465,000	5,933,000	1,270,000	3,868,000				
16	Commercial Units of Service		22,631,000	131,835	45,246	16,450	2,940	118,362				
17	OM&R Costs	18,463,000	2,909,000	8,258,000	3,182,000	3,024,000	533,000	557,000				
18	Other Capital Costs	10,553,000	1,040,000	6,272,000	2,111,000	978,000	152,000	-				
19	Total	29,016,000	3,949,000	14,530,000	5,293,000	4,002,000	685,000	557,000				
20	Industrial Units of Service		15,980,000	85,506	22,904	13,918	2,192	37,854				
21	OM&R Costs	13,517,000	2,054,000	5,356,000	2,974,000	2,558,000	397,000	178,000				
22	Other Capital Costs	6,812,000	735,000	4,068,000	1,069,000	827,000	113,000	-				
23	Total	20,329,000	2,789,000	9,424,000	4,043,000	3,385,000	510,000	178,000				
24	Surcharge Units of Service				8,213	40,451	2,262	3,800				
25	OM&R Costs	9,614,000			1,067,000	7,434,000	409,000	18,000	686,000			
26	Other Capital Costs	2,905,000			383,000	2,405,000	117,000	-	-			
27	Total	12,519,000			1,450,000	9,839,000	526,000	18,000	686,000			
28	Industrial Pretreatment Units of Service									69,185	400	181
29	OM&R Costs	1,649,000								452,000	994,000	203,000
30	Other Capital Costs	-								-	-	-
31	Total	1,649,000								452,000	994,000	203,000
32	Total Cost of Service	124,126,000	14,642,000	56,127,000	20,251,000	23,159,000	2,991,000	4,621,000	686,000	452,000	994,000	203,000

Ccf - 100 cubic feet

Ccf/day - Hundred cubic feet per day



Cost of Service Allocations

Adequacy of Existing Rates to Meet Cost of Service

Presented in Table 17 is a comparison of the allocated cost of service and revenue under existing rates by individual customer class and for the system in total.

Table 17
Comparison of Allocated Cost of Service with Revenues under Existing Rates
Test Year 2003

Customer Class	Total Cost of Service	Revenue Under Existing Rates	Indicated Revenue Increase Required
	\$	\$	\$
Residential	60,613,000	57,178,500	3,434,500
Commercial	29,016,000	27,757,700	1,258,300
Industrial	20,781,000	21,051,000	(270,000)
Surcharge	12,519,000	9,035,000	3,484,000
Industrial Pretreatment			
Annual Fee	203,000	203,000	-
Monitoring Charges	994,000	781,000	213,000
Industrial Pretreatment	1,197,000	984,000	213,000
Total	124,126,000	116,006,200	8,119,800

The indicated revenue increase required over existing rates for each domestic user class (residential, commercial, and industrial) indicates where emphasis should be directed in the subsequent rate design of sewer service charges. Pretreatment related fees will need to be modified to recover the total costs of the District's industrial pretreatment program.

The \$8,119,800, or 7 percent, overall increase in the level of wastewater service revenues is considered necessary to meet the projected revenue requirements for the 2003 test year. This overall level of revenue needs to be produced by the proposed rates developed and presented in subsequent sections of this report.



Proposed Wastewater Rate Adjustments

The initial consideration in the derivation of rate schedules for utility service is the establishment of equitable charges to the customers commensurate with the cost of providing that service. While the cost of service allocations to customer classes should not be construed as literal or exact determinations, they offer a guide to the necessity for, and the extent of, rate adjustments. Practical considerations sometimes modify rate adjustments by taking into account additional factors such as the extent of change from previous rate levels, existing contracts, and past local policies and practices.

Existing Rates

A summary of the existing sewer rates was presented earlier in Table 3 of the *Revenue Requirements* chapter. The existing schedule of sewerage service charges provides for a monthly or quarterly minimum charge depending on a customer's meter size or number of family unit equivalents and a commodity charge. The minimum charge includes a corresponding usage allowance of either 500 cubic feet per month or 900 cubic feet per quarter. For usage above the minimum allowance a commodity charge is assessed.

For residential customers consisting of one and two family units, the quarterly service charges are applicable to metered water use during the current billing period or a winter quarter billing period, whichever is less. The winter period represents the quarterly billing period most closely corresponding to usage during the months of October through April. All non-residential customers are billed on the basis of actual water used throughout the year with consideration given to either water used but not discharged to the wastewater system, or wastewater contributed from other sources such as wells or other water suppliers.

A sewerage surcharge is levied on customers contributing quantities of high strength wastes to the wastewater system. The existing surcharge is attributable to a customer's strength concentrations of suspended solids, BOD, and TKN in excess of the range of normal strength wastewater. Normal strength wastewater limits are presently defined by the District Cost of Service Rates as not exceeding 300 mg/l of suspended solids, 240 mg/l of BOD, and 25 mg/l of TKN. The existing sewerage surcharge rates, as shown in Table 3, are expressed as unit charges per 100 cubic feet for each mg/l of strength above the normal limits. To the extent that the strength of any pollutant



Proposed Wastewater Rate Adjustments

parameter is less than 80 percent of the corresponding value for normal strength wastewater limits, a credit is allowed as an offset against surcharges otherwise due.

All costs related to the industrial pretreatment program are recovered by a three part system of charges consisting of a minimum charge, an annual administrative fee, and a monitoring charge. The minimum charge is applicable to all non-residential customers receiving service through a 1-inch or larger meter and billed similarly as, and in conjunction with, other sewerage service charge minimums.

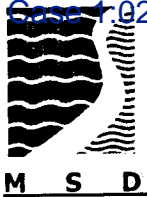
The annual administrative fee and monitoring charge are applicable to those industrial users required to be permitted under the District's program. These charges were designed to recover the remaining costs of administering the program as well as recovering the costs of sampling and monitoring pretreatment customers.

Proposed Wastewater Rate Adjustments

The overall level of revenue requirements and cost of service allocations described in this report provide information for adjusting wastewater rates. The preceding cost of service allocation sections of the report illustrates the changes needed to recover costs of service from customer classes served and provide the total level of revenue required.

Proposed Sewerage Service Charges

Table 18 shows the proposed schedule of sewerage service charges. The proposed charges are designed using the same form of rate structure as the existing service charges and is anticipated to generate an additional 7 percent in revenue.



Proposed Wastewater Rate Adjustments

Table 18
Proposed Sewerage Service Charges - Test Year 2003

Minimum Charge

The minimum charge shall be based on the size of the water meter used to serve the premises, or the size of the premise served, as determined by the number of units therein, whichever results in the larger minimum charge.

The minimum charge shall include the allowance for the first 500 cubic feet of water used in the case of monthly bills; and the first 900 cubic feet of water used, in the case of quarterly bills.

The minimum charge rates shall be as follows:

Meter Size Inches	Number of Family Units	Monthly Bills \$	Quarterly Bills \$
5/8	1	20.66	42.47
3/4	2-3	24.79	54.76
1	4-5	31.90	75.08
1-1/2	6-12	49.18	127.58
2	13-20	67.78	180.72
3	21-50	166.12	463.78
4	51-115	275.09	768.09
6	116-200	538.20	1,517.58
8	Over 250	799.99	2,264.42
10		1,075.07	3,025.87
12		1,251.80	3,493.65

Commodity Charge

The commodity charge shall be based on the quantity of water used on the premises served as same is measured by a water meter or meters therein used, which meters must be acceptable to the Municipality that collects such charge.

The commodity charges for each 100 cubic feet (Ccf) consumed are as follows:

First 500 cubic feet per month; or 900 cubic feet per quarter -	Minimum
Next 4,500 cubic feet per month; or 14,100 cubic feet per quarter -	\$2.127 /Ccf
Over 5,000 cubic feet per month; or 15,000 cubic feet per quarter -	\$1.701 /Ccf

Basis of Charge

For residential water service accounts (one and two family residences) a quarterly minimum and commodity charge shall be based upon water used during a winter quarterly billing period. Said winter period being the quarterly billing period most closely corresponding to usage during the months of October through April. Said charges shall be payable with each bill rendered throughout the year.

All non-residential customers shall be charged based upon the water used during a billing period that is subject to a sewerage charge. The District will consider applications, fully supported, for adjustment due to nonsewered water use. All well water and water reaching the system from other sources will be considered in the basis for charge.



Proposed Wastewater Rate Adjustments

Proposed Sewerage Surcharges

Table 19 presents the schedule of proposed sewerage surcharges. These charges are designed to generate an additional 7 percent in revenue on an annual basis.

Table 19
Proposed Sewerage Surcharges – Test Year 2003

For customers having high strength waste discharge, the surcharge, which is in addition to other sewerage service charges, shall be computed on the following basis:

Suspended Solids (SS)	\$0.001057	per 100 cubic feet for each mg/l of SS strength above 300 mg/l
Biochemical Oxygen Demand (BOD)	\$0.001806	per 100 cubic feet for each mg/l of BOD strength above 240 mg/l
Total Kjeldahl Nitrogen (TKN)	\$0.001580	per 100 cubic feet for each mg/l of Total Kjeldahl Nitrogen (TKN) strength above 25 mg/l.

Provision

Provided, however, that to the extent the strength of a pollutant is less than eighty percent (80%) of the corresponding value for normal strength sewage, a credit shall be allowed as an offset against surcharge otherwise due, the credit shall be calculated by multiplying the above specified surcharge rate for the pollutant in question times the difference between actual pollutant concentration in mg/l and eighty percent (80%)

of the corresponding value for normal sewage. No credit shall be allowed in excess of surcharge otherwise due.

Note

The above surcharge rates, expressed on a rate per pound basis are as follows:

Suspended Solids (SS)	\$0.1695	per pound of excess strength
Biochemical Oxygen Demand (BOD)	\$0.2894	per pound of excess strength
Total Kjeldahl Nitrogen (TKN)	\$0.2532	per pound of excess strength

Proposed Industrial Pretreatment Charges

To comply with Federal EPA rules and regulations, the District has developed and implemented an industrial pretreatment program. In order to finance the costs associated with this program, a continuation of the existing three part system of charges is proposed. This system includes a minimum charge, an annual administrative fee, and a monitoring



Proposed Wastewater Rate Adjustments

charge. Industrial pretreatment charges, shown in Table 20, have been increased in a manner similar to the sewerage service charges and the surcharges.

Table 20

Proposed Industrial Pretreatment Charges – Test Year 2003

All users required to apply for and obtain a wastewater discharge permit or which are subject to federal pretreatment standards, as specified in the MSD Rules and Regulations, shall be subject to the payment of a pretreatment charge(s), as determined by the Director. Said pretreatment charge(s) shall be sufficient to recover, in whole or in part, the costs for the MSD Pretreatment Program including investigations, record keeping, administration, and monitoring of industrial waste discharges to the system.

Each industrial user shall pay a pretreatment charge(s) as follows:

Annual Administrative Charge - \$1120 per annum

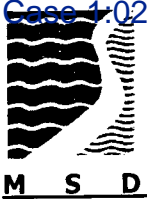
Maximum Monitoring Charge - \$6,450 per monitoring event

The monitoring charge shall become effective at such time as an industrial user is subject to compliance to one or more pretreatment standards.

Further, any user which discharges any toxic pollutants which cause an increase in the cost of managing effluent or sludge from the District's treatment system shall pay for such increased costs.

Adequacy of Proposed Wastewater Charges

A comparison of estimated wastewater service revenue under proposed rates with the cost of service by customer class for the 2003 test year is shown in Table 21. As shown, revenues from the proposed charges will adequately recover the District's total overall cost of service.



Proposed Wastewater Rate Adjustments

Table 21
Comparison of Revenue under Proposed Charges with Total Cost of Service
Test Year 2003

Customer Class	Total Cost of Service	Revenue Under Existing Rates	Revenue Under Proposed Rates
	\$	\$	\$
Residential / MultiFamily	60,613,000	57,178,500	61,182,200
	0		
Commercial	29,016,000	27,758,000	29,701,300
	0		
Industrial	20,781,000	21,050,900	22,524,500
	0		
Surcharge	12,519,000	9,035,000	9,667,100
	0		
Industrial Pretreatment	<u>1,197,000</u>	<u>984,000</u>	<u>1,196,000</u>
Total	124,126,000	116,006,400	124,271,100

The rates as proposed in this report should be adequate to meet projected requirements through the year ending December 31, 2003. It is recommended that a financial review be made during the second half of 2003 to review program changes and adjustments, and the adequacy of expected revenues for 2004 and subsequent years.

Typical Bills

A comparison of typical bills under the proposed schedule of sewerage service charge rates with those under existing rates is shown in Table 22. The average quarterly bill for residential customers receiving service through a 5/8-inch meter is for about 20 Ccf of volume and, as indicated in Table 22, would be increased \$4.31 per quarter, or \$1.44 per month, under the proposed rates.



Proposed Wastewater Rate Adjustments

Table 22
Typical Customer Sewer Bills under Existing and Proposed Rates

Meter Size	Usage	Existing Bill	Proposed	
Inches	Ccf	\$	Bill	Increase
		\$	\$	\$
Quarterly				
5/8	0	39.69	42.47	2.78
5/8	3	39.69	42.47	2.78
5/8	6	39.69	42.47	2.78
5/8	9	39.69	42.47	2.78
5/8	12	45.65	48.85	3.20
5/8	15	51.62	55.23	3.61
* 5/8	20	61.56	65.87	4.31
5/8	25	71.50	76.50	5.00
3/4	30	92.93	99.43	6.50
3/4	50	132.69	141.97	9.29
Monthly				
1	75	159.02	170.15	11.13
1	100	198.77	212.69	13.92
1-1/2	150	294.42	315.03	20.61
2	200	391.31	418.70	27.39
2	300	550.31	588.83	38.52
3	500	960.21	1,027.43	67.22
3	1,000	1,755.21	1,878.08	122.87
4	5,000	8,217.05	8,792.25	575.20
6	10,000	16,412.95	17,561.86	1,148.91
8	20,000	32,557.61	34,836.65	2,279.04

Ccf - 100 cubic feet or 748 gallons.

* Average Residential User

